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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/339,869	06/25/1999	JUN KOIDE	35.C13613	3159

5514 7590 05/23/2005

FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

TUGBANG, ANTHONY D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 05/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Supplemental
Office Action Summary

Application No.

09/339,869

Applicant(s)

KOIDE ET AL.

Examiner

A. Dexter Tugbang

Art Unit

3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-15 and 32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-15 and 32 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date. 5/19/05.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration in the Interview Summary (attached herein) of the finality of the rejection of the last Office Action (dated 4/7/05) is persuasive and, therefore, the finality of that action is withdrawn. Although, the finality of the last Office Action is withdrawn, the rejections are maintained and are hereby repeated below for the applicant(s) convenience.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Objections

3. Claims 1, 6 and 32 are objected to because of the following informalities: in Claim 1, the phrase of "a discharge port" (line 8) should be changed to --the discharge port--.

The same problem in Claim 1 also occurs in each of Claims 6 and 32. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. Claims 1-3, 6-10, 15 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated Nishiwaki et al 5,263,250.

Regarding Claim(s) 1, 6 and 32, Nishiwaki discloses a method of processing an ink discharge port for manufacturing an ink jet head comprising: closely contacting a mask plate 8 (see col. 5, lines 55-57) having openings corresponding to discharge ports on a discharge port plate 12 with a face of the discharge port plate on an ink discharge side (see col. 4, lines 57+);

Art Unit: 3729

and forming the discharge port on the discharge port plate by irradiating a high energy ultraviolet excimer laser simultaneously through the mask plate so that the laser is inclined with respect to a vertical axis that is perpendicular to the mask plate (see Fig. 3 and col. 5, lines 45-50).

With respect to the recitation of the “one of the respective discharge port positions” (lines 11-12 of Claim 1 with similar limitations in each of Claims 6 and 32), it is noted that in Figure 4 of Nishiwaki, the discharge port plate is formed through a plurality of respective discharge port positions 40, 41a, 41b, in which plural beams are simultaneously irradiated at these “respective discharge port positions” to form at least one the discharge ports and are incident at the discharge port position from different directions (shown in Figs. 2 or 3 and the discussion at col. 5, lines 15-20).

With regards to Claims 2, 3, 8 and 9, Nishiwaki further teaches that the symmetry of incident beams are clearly symmetrical, have the same angle, and are equally divided with respect to a vertical X-axis (shown in both Figures 2 and 3). Further regarding Claims 3 and 9, Nishiwaki additionally teaches a division of beams that is within a “circumference of a circle” as indicated by the circle in Figure 4.

With respect to Claim 7, Nishiwaki further teaches that the discharging port forming step of forming the discharging ports by irradiating high energy beams simultaneously can be performed after the discharge port plate, i.e. nozzle plate, is bonded or fastened to an ink jet main body (see col. 6, lines 64-68).

With respect to Claim 10, Nishiwaki shows (in Fig. 2) that the high ultraviolet beams comprise of at least two beams with each being inclined symmetrically with respect to the vertical X-axis of the mask plate 8 and are incident upon the mask plate in a direction at right

Art Unit: 3729

angles to an axis along an arrangement direction of the discharge ports. It is noted that the “arrangement direction” can be any direction selected such that it would be at right angles incident from the mask plate.

Claim Rejections - 35 USC § 103

5. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiwaki.

Nishiwaki discloses the claimed manufacturing method as relied upon above, further including that the high ultraviolet beams comprise of at least four beams (see Fig. 2). However, to choose any desired specific angle of irradiation of the incident beams in relationship to the arrangement direction of the discharge port is an obvious matter of design choice, since the applicants have not disclosed that the claimed *angle of 45 °* solves any stated problem or is for any particular purpose, and it appears that the invention would perform equally well with the various angles of incident beams taught by Nishiwaki’250.

6. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiwaki’250 in view of Japanese Patent Publication JP 2-187346, referred to hereinafter as JP’346.

Nishiwaki discloses the claimed manufacturing method as relied upon above. Nishiwaki does not teach that 1) the ink flow paths are rectangular in shape, and 2) that the discharge port plate is formed by a material of resin.

JP’346 shows an ink jet head in which corresponding ink flow paths 14 (in Fig. 9) are rectangular in shape and are connected to a discharge port plate 10. JP’346 teaches that the

Art Unit: 3729

discharge port plate is made of a resin material, which is ablated by laser beams to form the discharge ports 11, and that the rectangular ink flow paths 14 are formed by the laser beams after the discharge ports are formed (see Purpose). An advantage of the above process and material provides the necessary amount of jet-out speed for the ink drops onto a medium, i.e. paper (again, see Purpose).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Nishiwaki by forming the ink flow path rectangular in shape and the discharge port plate with a resin material, as taught by JP'346, to positively provide an operational ink jet head with the necessary amount of jet-out speed for the ink drops onto the medium.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiwaki in view of Muto 5,548,894, referred to hereinafter as Muto'894.

Nishiwaki discloses the claimed manufacturing method as relied upon above. Nishiwaki does not teach that the discharge port plate is formed of silicon nitride.

Muto'894 teaches that forming discharge port plates (nozzle plate 61) can be accomplished by conventional, art recognized equivalent materials of either resin or silicon nitride (see col. 25, line 55 to col. 26, line 16). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have formed the discharge port plate of Nishiwaki, alternatively, with such conventional, art recognized equivalent materials with compositions of either resin or silicon nitride, to produce equivalent art recognized discharge port plates.

Response to Arguments

8. It is noted that the applicant(s) arguments with respect to the claimed “area” of the “formed discharge port” in relationship to the direction of the “source of the beams”, is now moot being that these limitations have been completely removed from each of Claims 1, 6 and 32 in the amendment filed on 1/10/05. Therefore, upon further consideration by the examiner, the rejections above are maintained.

Conclusion

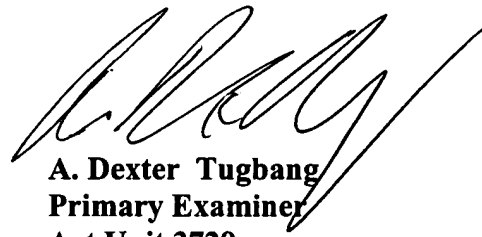
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 571-272-4570. The examiner can normally be reached on Monday - Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/339,869
Art Unit: 3729

Page 7



A. Dexter Tugbang
Primary Examiner
Art Unit 3729

May 19, 2005